REMARKS

Claims 2-4, 6-8, and 11-30 are pending. By this Amendment, no claims are cancelled, claim 30 is amended and no new claims are added. Support for the amendments can be found throughout the specification and drawings as originally filed.

Telephone Interview Summary

Applicants thank the Examiner for the courtesy extended to their undersigned representative in a telephone interview on May 13, 2009. During the telephone interview, proposed amendments to claim 30 were discussed in view of the cited art.

Claim Rejections – 35 U.S.C. § 102

Claims 1, 11-14, and 29 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,333,200 to Cooper et al. The Office Action refers to claim 1, which was previously cancelled. For the sake of responding to the Office Action, Applicants assume the Office Action is referring to sole independent claim 30. Independent claim 30 has been amended to include the limitation that for the computation of each of four temporal filters, the temporal filter represents an acoustic transformation applied to the claimed sound signal (left or right) by the reflective environment between the claimed speaker (left or right) and the claimed microphone (left or right), as recited in the claim. Insofar as the rejections apply to the amended claim, Applicants respectfully traverse the rejections.

The present invention as claimed is directed to simulating the effect of a reflective environment, such as a cathedral or any type of environment having a particular sound pattern,

on the sound signal between the speakers and the acoustic detector positioned within the reflective environment. In order to achieve this simulation, right and left sound signals are diffused in a reflective environment by two speakers and detected by an acoustic detector comprising right and left microphones. Temporal filters are then calculated representing the acoustic transformation applied to the sound signals by the reflective environment between the speakers and the microphones. It is then possible to simulate the transformation applied to the sound diffused in the reflective environment by applying the calculated filters, modified by at least one of the transformations listed in claim 1, to an original stereo sound signal. The listener then has the impression that the stereo sound signals are diffused in a virtual environment which is similar to the reflective environment.

Inapposite of the presently claimed invention, Cooper et al. is directed to a method for *compensating* the acoustic transformation applied to the sound signals, emitted by speakers 140, 142, between the speakers and the listener's ears 143 and 145 so that the sound received on the listener's ears is similar to the sound that has been detected by the microphones 114, 116 of the head 102. As stated in the Abstract, "the system first utilizes a synthetic or artificial head microphone pick-up and utilizes the results as inputs to a cross-talk cancellation and naturalization compensation circuit...to adapt the head diffraction compensated signals for use as loudspeaker signals." One of ordinary skill in the art would recognize that the function of crosstalk cancellation filters is to eliminate or annihilate an acoustic transformation.

More specifically, as disclosed in Cooper et al. at column 7, line 59 to column 8, line 14, the filters 132, 134, 136, and 138 represent the *inverse* of the acoustic transformation applied to the sound signals by the reflective environment between speakers 140, 142 and ears 143, 145.

The acoustic transformation applied to the sound signals emitted by speakers 140, 142 due to the reflective environment is represented mathematically by filter S of Figure 1B (*see* col. 7, line 62: "S is the transfer function for the acoustical propagation path characteristics from one speaker to the ear on the same side") and filter A of Figure 1B (*see* col. 7, line 64: "A is the transfer function for the propagation path characteristics to the ear on the opposite side.") Because filters 136 and 138 are equal to 1/S and filters 132 and 134 are equal to $1/1-C^2$ (C being equal to –A/S), the filters 132, 134, 136, and 138 represent mathematically the inverse of the acoustic transformation applied to the sound signal by the reflective environment.

Therefore, when the filters 132, 134, 136, and 138 are applied to the sound signals detected by microphones 114 and 116, the listener can hear substantially the sound detected by microphones 114 and 116 because the acoustic effect of the room in which the speakers 140 and 142 are positioned is compensated by filters 132, 134, 136, and 136 of naturalizing network 130.

In summary, Cooper et al. cannot anticipate, but rather teaches away from newly amended claim 30 because Cooper et al. teaches to use filters (132, 134, 136, and 138) that annihilate the acoustic transformation of the sound signal by the reflective environment, whereas the presently claimed invention teaches to conserve and/or enhance the acoustic transformation by calculating the temporal filters representing the acoustic transformation applied to the sound signals by the reflective environment between the speakers and the microphones, as presently claimed.

Additionally or alternatively, Cooper et al. does not disclose or suggest "applying a first modified temporal filter to the right original electric sound signal to obtain a first processed electric sound signal, applying a second modified temporal filter to the right original electric

sound signal to obtain a second processed electric sound signal, applying a third modified temporal filter to the left original sound signal to obtain a third processed electric sound signal, and applying a fourth modified temporal filter to the left original sound signal to obtain a fourth processed electric sound signal" as recited in newly amended claim 30. Rather, Cooper et al. discloses in Figure 2b that filters 132, 134, 136 and 138 are applied to the stereo sound signals as a group of two filters in series: filters 134 and 138 are applied in series to a right sound signal, and filters 132 and 136 are applied in series to a left sound signal. The filters 132, 134, 136, and 138 are not applied in order to obtain four different processed sound signals, as presently claimed.

Applicants respectfully submit that newly amended claim 30 is allowable for at least these reasons. Claims 11-14 and 29 depend from claim 30 and are allowable for at least the same reasons claim 30 is allowable.

Claim Rejections – 35 U.S.C. § 103

Claims 2 and 7-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cooper et al. as applied to claim 1 in view of U.S. Patent No. 6,961,433 to Ishii, claim 3 stands rejected under § 103(a) as being unpatentable over Cooper et al. and Ishii as applied to claim 2 in view of U.S. Patent No. 7,181,019 to Breebaart et al., claims 4-6 stand rejected under § 103(a) as being unpatentable over Cooper and Isshi as applied to claim 2 in view of U.S. patent No. 5,960,390 to Ueno et al., claims 15-17, 19 and 21-18 stand rejected under § 103(a) as being unpatentable over Cooper et al. as applied to claim 1 in view of Ueno et al., claim 18 stands rejected under §103(a) as being unpatentable over Cooper et al. and Ueno et al. as applied to

claim 16, in view of U.S. Patent No. 6,535,920 to Parry et al., and claim 20 stands rejected under § 103(a) as being unpatentable over Cooper et al. as applied to claim 1, in view of Ishii, and further in view of Ueno et al. Insofar as the rejections apply to newly amended claim 30, Applicants respectfully traverse the rejections.

None of the cited references make up for the deficiencies of Cooper et al. described above as applied to claim 30. Ishii is cited for computing filter factors using frequency spectrums of received white noise electric signals. Ueno et al. is cited for modification of an audio signal. Parry et al. is cited for disclosing an electric sound signal stored in a circular buffer memory.

Applicants respectfully assert that the Examiner has not pointed to any evidence that Breebaart et al. is prior art under any section of 35 U.S.C. § 102. The earliest priority date of the present disclosure is March 20, 2003 (French Priority No. 03/50057), and the U.S. filing date is the international application filing date of March 22, 2004 per MPEP § 1893.03(b). The earliest priority date (March 20, 2003) is the initially presumed invention date; however, Applicants reserve the right to submit evidence for purposes of establishing an earlier filing date, as needed.

Breebaart et al. is a § 371 national stage application of International Application No. PCT/IB2004/050085 filed February 9, 2004. The International Application published in English as WO 2004/072956 on August 26, 2004 and the '019 Patent published as US 2006/0147048 on July 6, 2006.

A reference is prior art under 35 U.S.C. § 102(a), if "the invention was…patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent…" Neither the '019 Patent nor the PCT publication is prior art under

§ 102(a) because the publication dates of the '019 Patent (July 6, 2006) and the PCT publication (August 26, 2004) are *after* the earliest priority date (March 20, 2003) of the present disclosure.

A reference is prior art under 35 U.S.C. § 102(b), if "the invention was patented or described in a printed publication in this or a foreign country...more than one year prior to the date of the application for patent in the United States...." Neither the '019 Patent nor the PCT publication is prior art under § 102(b) because the publication dates of the '019 Patent (July 6, 2006) and the PCT publication (August 26, 2004) are *after* the U.S. filing date (March 22, 2004) of the present disclosure.

A reference is prior art under 35 U.S.C. § 102(e) if "the invention was described in - (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent..." Neither the '019 Patent nor its publication (US 2006/0147048) are prior art under either § 102(e)(1) or (2) because the U.S. filing date (February 9, 2004) of the Breebaart International Application is *after* the earliest priority date (March 20, 2003) of the present disclosure.

Official Notice

With regard to the rejection of claim 19, the Examiner takes official notice on pages 11-12 that it "would have been obvious to divide a frame of the signal into N blocks, double block are formed that are overlayed on each other by half, the transform of each of the double blocks is performed, the N packets of coefficients are completed by the constant samples to obtain double packets, each of the N double blocks are multiplied by one of the N double packets and

multiplied double blocks are obtained, and the multiplied blocks are extracted from the multiplied double blocks since the blocks are divided within a circular buffer." Applicant respectfully traverses this assertion and points out that if "concept and advantages of the above limitations are well known in the art," it would not be difficult to locate and cite a reference disclosing this limitation. Applicant requires that the basis for this assertion be stated and a reference cited to substantiate this assertion or that the Examiner execute a declaration or affidavit if personal knowledge forms the basis for the rejection. *See* M.P.E.P. § 2144.03 ("The Examiner may take official notice of facts outside of the record which are capable of instant and unquestionable demonstration as being 'well- known' in the art…If the Applicant traverses such an assertion the Examiner should cite a reference in support of his or her position."). Applicant thus respectfully points out that a *prima facie* case of obviousness has not been established, and respectfully requests the Examiner to reconsider and withdraw this rejection.

Further, with regard to the rejection of claim 24, the Examiner takes official notice on page 13 that it "would have been obvious to perform the transform the filtering temporal coefficients are divided into Q slots (HDD1-HDD4) of coefficients with progressive length M, 2M, 4M…(2(Q-1))M points, the transform of each of these slots is performed and transformed slots are obtained, a frame of the electric sound signal is divided into blocks (x1-x8) with a length of M points, the transform of each of these blocks is performed and transformed blocks are obtained, and the transformed blocks are multiplied by the transformed slots and corresponding multiplied blocks are obtained by inverse transformation to the blocks of signals that half-overlap each other two by two in time since the transformations are discrete Fourier transforms and inverse discrete Fourier transforms." Applicant respectfully traverses this

assertion and points out that if "concept and advantages of the above limitations are well known in the art," it would not be difficult to locate and cite a reference disclosing this limitation. Applicant requires that the basis for this assertion be stated and a reference cited to substantiate this assertion or that the Examiner execute a declaration or affidavit if personal knowledge forms the basis for the rejection. *See* M.P.E.P. § 2144.03 ("The Examiner may take official notice of facts outside of the record which are capable of instant and unquestionable demonstration as being 'well- known' in the art...If the Applicant traverses such an assertion the Examiner should cite a reference in support of his or her position."). Applicant thus respectfully points out that a *prima facie* case of obviousness has not been established, and respectfully requests the Examiner to reconsider and withdraw this rejection.

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,

Daidre L. Burgess
Registration No. 60,389

Customer No. 24113
Patterson, Thuente, Skaar & Christensen, P.A.
4800 IDS Center
80 South 8th Street
Minneapolis, Minnesota 55402-2100
Telephone: (612) 252-1558